AVICULTURAL MAGAZINE

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VOL. 59 No. 3 PRICE 5/- MAY–JUNE 1953

THE AVICULTURAL SOCIETY

Founded 1894

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THE AVICULTURAL MAGAZINE

The Magazine is published bi-monthly, and sent free to all members of the Avicultural Society and Avicultural Society of America. Members joining at any time during the year are entitled to the back numbers for the current year on the payment of subscription. All matter for publication in the Magazine should be addressed to:—

The Editor: Miss Phyllis Barclay-Smith, 51 Warwick Avenue, London, W. 9. Telephone: Cunningham 3006.

The price of the Magazine to non-members is 5s., post free, per copy, or £1 10s. for the year. Orders for the Magazine, extra copies and back numbers (from 1917) should be sent to the publishers, Stephen Austin & Sons, Ltd., 1 Fore Street, Hertford, England. Telephone: Hertford 2546-9.

PRESIDENT'S GARDEN PARTY

MR. and MRS. EZRA very kindly invite members of the Avicultural Society to spend the afternoon of Saturday, 30th May, at Foxwarren Park, Cobham, Surrey.

Members who intend to be present *are requested to notify the Hon. Secretary*, A. A. PRESTWICH, 61 Chase Road, Oakwood, N. 14, not later than 23rd May, and to state whether they require a seat in the special motor coach which will leave the Alexandra Hotel, Hyde Park Corner, at 2 p.m.

Scarlet-tufted Malachite Sunbird.

AVICULTURAL MAGAZINE

THE JOURNAL OF THE AVICULTURAL SOCIETY
AND THE AVICULTURAL SOCIETY OF AMERICA

Vol. 59.—No. 3.—*All rights reserved.* **MAY-JUNE, 1953**

THE SCARLET-TUFTED MALACHITE SUNBIRD

(*Nectarinia j. johnstoni*)

By JOHN YEALLAND (London, England)

The Scarlet-tufted Malachite Sunbird was first obtained by Sir Harry Johnston on Kilimanjaro in 1884. An account of the species together with a coloured plate of an adult male appear in Sir Frederick J. Jackson's *Birds of Kenya Colony and the Uganda Protectorate*, vol. 3.

Mr. John C. Williams has contributed a valuable paper "*Nectarinia johnstoni* : a Revision of the Species, together with Data on Plumages, Moults and Habits," (*Ibis*, 93 1951, pp. 579–595) in which he demonstrates (in agreement with Sclater) that there are three races : " *N. johnstoni* is therefore separable into *N. j. johnstoni*, a long-winged, long-billed form with green metallic plumage in the males ; *N. j. salvadorii*, a short-winged, short-billed race, also with green metallic plumage, and *N. j. dartmouthi*, a long-winged, short-billed race with bluish-green metallic plumage in the males and dark brown females."

N. j. johnstoni is most common on the alpine moorlands of Mount Kenya from about 11,000–14,000 feet on the western side and from 10,000 to 10,500 feet on the eastern slopes—wherever the Giant Lobelia (*Lobelia keniensis*) is in bloom.

Of the diet, Mr. Williams says, " The main food of the typical race is Diptera, small flies forming the bulk (ca. 85 %) of the contents of the 28 stomachs examined. Also included in the stomach contents, in order of frequency, are the following : minute Coleoptera ; spiders ; unidentified insect (?) fragments ; yellow vegetable matter (?) ; pollen (once recorded). Nectar was almost certainly present, but was difficult to detect."

Of the roosting habits he says, " On several occasions old birds were observed to retire to roost in deep holes, excavated originally by the

Mountain Chat (*Pinarochroa sordida*) in the matted dead leaf clusters of the Tree Groundsel (*Senecio keniodendron*). These holes, which must give much protection to this sunbird during the bitterly cold nights, are sometimes, perhaps as a rule, used communally, as on one occasion two females and a male were seen to enter a cavity within a few minutes of one another. Immature birds were seen to enter disused nests for resting and warmth."

It appears that the normal clutch is one egg only. There is an eclipse plumage in *N. j. johnstoni* and *N. j. salvadorii*, but it appears doubtful whether this occurs in *N. j. dartmouthi*.

Some of the *N. j. johnstoni* (which is new to aviculture) were collected on Mount Kenya by Mr. R. Bloom, and those kept at the London Zoo have been thriving on the usual Sunbird food together with house flies. One male which has spent the past winter in an outdoor aviary (with a heated shelter) was often outside and singing in quite cold weather.

* * *

NOTES ON THE TRIP TO COLLECT THE SCARLET-TUFTED MALACHITE SUNBIRD (*NECTARINIA JOHNSTONI JOHNSTONI*) FROM MOUNT KENYA

By Reginald T. Bloom (Ludham, Norfolk, England)

The idea of catching the Sunbird, *Nectarinia johnstoni johnstoni*, first came into being when talking with Lord Chaplin one evening. As a result of modern travel the comfort of an English fireside was soon exchanged for the lower slopes of Mount Kenya, on whose high moorlands this bird makes its home, and my small mule safari was moving ahead of me, following one of the many game trails which lead upwards into the dim shadowy depths of the Giant Cedar forest.

Thousands of Parrakeets screeched high in the trees overhead; a Hartlaub's Touracou was flushed off a low branch, showing its crimson wings; Hornbills hooted in the higher branches, whilst dragonflies and butterflies hovered over the thick beds of nettles. It was an eerie journey, the Podo trees creaked and groaned and the breeze rustled through the high branches, admitting rays of sunlight which formed strange moving patterns on the green below.

Gradually the way became steeper, ridges and deep valleys formed, some with little streams running down them, but the game tracks followed the ridges closely, making a track for us. Although there were

many signs of game, five elephants were the only big game we saw. Soon the larger trees thinned and small glades bathed in sunlight were a warm and cheerful change from the darkness, and a suitable place suggested rest and food before entering the thick bamboo forest which would engulf the remainder of the trail.

The bamboo forest commenced at about 9,000 feet and seemed to swallow us and shut its mouth behind us, so sudden was the change. It was darker and colder, with a damp, penetrating cold which chills to the bones, and because of the stillness it was at times almost frightening. It seemed as if the ground had sprouted a whole forest of organ pipes which, draped in soft green lichen, rose about 40 feet, to interlace grotesquely and form a series of arches resembling some vast witches' kitchen. These trees were placed so thickly that game trails formed the only means of passage, and even then a way often had to be cleared before the mules could pass. Their bulky loads suffered hard treatment, and when they became entangled with the bamboo it snapped with a sound like a shot which would echo through the forest.

It was a long four hours before the highest edge was finally reached but, as suddenly as it had begun, this dense forest ended, the silence and the darkness were behind, and they were replaced by the evening sunlight and bird-song. The altitude was now about 10,000 feet and the ground became more level, the country resembling an English woodland scene with large oak-like trees draped with creepers. There were bushes of feathery bamboos and clumps of brightly flowering salvia (*Leonotis*) on which hundreds of Goldenwings, Bronzy, and Malachite Sunbirds were feeding.

These birds were fighting and squabbling, and there was a continual noise of angry chattering. Their nests were hanging like large cocoons both from the young bamboos and from the *Leonotis*, which grew to a height of about 15 feet.

Now it was possible to look down over the green forest belt to the golden plains below, rising and falling in broad undulating curves until they joined the Aberdare Mountains, 50 miles away. The tent was pitched snugly in an elbow of the forest before the sun sank behind the near-by hills. As supper was cooked in the embers raked from an enormous log fire the frost fell and the wind blew bitterly cold, so that one froze on one side and roasted on the other. In the morning the small tent was frozen like a board and the trees and ground were covered with a thick hoar frost which crunched underfoot.

The camp was kept in the shelter of the forest edge, which ended abruptly and gave way to open moorland. This moorland continued from about 11,000 feet until it reached the snows at 15,000 feet, and it was crossed by rugged ridges and steep, stony valleys, leading upwards towards the massive glaciers and snowy peaks. The snow gleamed brightly in the morning sunlight which, creeping over the mountain's

northern shoulder, lit the high ground in the plains below, until eventually all was flooded with a soft golden light.

The tops of the ridges were covered in tree heather, *Protea* bushes, and hundreds of brightly coloured flowers. On a *Protea* bloom the first *Nectarinia johnstoni* was seen. It was a cock in full breeding plumage ; its metallic green glistened, while its long, ribbon-like tail waved in the breeze. It appeared to be less fidgety than other Sunbirds, feeding quite unconcernedly, digging its bill into the petals of the flower in search of the minute green beetles found on this plant, and occasionally whistling to its mate. These birds showed a fondness for bathing and could often be seen washing themselves as the top of the ice began to melt from the puddles, or even breaking the ice on water which had collected in the lobelia leaves so as to splash in that.

Suddenly a hen flew off a small egg-shaped nest built in the fork of a near-by heather bush about 4 feet from the ground. The nest was entered through a small hole in the end, the hole was facing away from the prevailing northerly wind, and investigation proved that it was lined with the furry down of the *Protea* seed pod.

During the next few days twenty nests were found, of which one contained a single egg, seventeen a single chick, and two were empty. All the nests were built in sheltered places, usually in heather bushes, but there was no attempt to camouflage or conceal them. The single egg was pink in colour and covered with dull red spots, these spots being grouped more thickly at the broader end ; in size the egg was similar to that of a sparrow.

Each pair of *Nectarinia johnstoni* appeared to have their own territory ; this seemed to extend for about 200 square yards, and the birds defended it vigorously. Should a territory be invaded by another cock a terrific fight ensued, the two chasing each other at a truly amazing speed, at times flying straight upwards until completely out of sight. After this had happened the victor would glide slowly back, his breast puffed out and his tail trailing high behind.

Both cock and hen fed the chick, which left the nest as soon as it was able and fluttered from flower to flower, squatting from time to time with its wings drooped and quivering.

On the higher moorlands, where the giant lobelia and giant groundsel grew to a height of approximately 9 feet and resembled fields of gigantic brussel sprout stalks, the birds were found in large numbers, even as high as the permanent snows. The sunshine at this height was quite warm, but as soon as the sun was covered by cloud it became bitterly cold. These moorlands resemble those of Cumberland, having the same windswept bleakness, and they are often blanketed in heavy cloud, so that at times all is grey and dull. When the clouds pass over, brilliant sunlight lights up the flowers and bushes, and the snow of the mountain peaks gleams white against a deep blue sky.

The Kenya Malachite was the only other Sunbird seen on the moorland and it was quite easily distinguished because of its lighter colour and its more slender body. It was never allowed to stay for very long, being immediately chased off by the *Nectarinia johnstoni*.

It was noticed that the birds left the higher moorland near the snows in the later afternoon and were seen in quantities on the lower slopes just above the forest about four o'clock, whereas during the day only the pairs were seen here. A number of fights seemed to take place on the arrival of these daily migrations to the lower slopes.

Once captured, these birds could be examined more closely, but a detailed description of them has already been published by John G. Williams (*Ibis*, 93, 1951). They were found to accept captivity readily, and in three days would take food from the hand. The return journey was so arranged that the bird boxes were carried by hand and not by mule. Frequent stops had to be made so as to rest and feed the birds. After a short stay at the base camp the birds commenced their air journey to London, where all arrived safely.

* * *

THE UNEXPECTED

By The Duke of Bedford (Woburn, Beds, England)

Psychological abnormalities in birds which involve a profound departure from the usual instincts of their species are always interesting. This year for the first time I have had a case of two hen Budgerigars not only sharing the same mate, which is fairly common, but also the same nest box, which is much less so. As a rule a hen Budgerigar is violently jealous of another hen approaching her nest, and any friendship which two hens may have formed prior to matrimony rapidly dissolves when the boxes are put in. When the nests went into an aviary containing about nine pairs of homers, lively, though not dangerous, squabbles were for a time the order of the day. To my surprise, however, I noticed that in the midst of the turmoil of female conflict a white-blue and a cobalt hen were remaining the best of friends, rubbing noses and examining two adjacent boxes with the most complete good will. The cobalt gave way at times to the white-blue, but there was always civility on both sides. Any other hen, however, who approached their boxes was promptly attacked by one or both of the friends. That it was not a simple case of two birds of the same sex achieving a " pair formation " relationship was, however, shown by the fact that both hens accepted a yellow cock as their mate, and were as friendly towards him as towards each other. For a time I thought that the cobalt

and the white-blue, in spite of their friendship, would end by each taking one of the two boxes to which they had staked out a claim, but suddenly they decided they could not be parted ; allowed a weaker hen to take possession of one of their boxes ; and laid and incubated side by side in the other one. The yellow cock obviously enjoys having two wives, but if they present him with twelve children he will learn that after supper comes the bill !

While this odd domestic problem was developing inside the aviary a different one was being staged on a pond outside. Two full-winged Carolina drakes had for many months enjoyed a bachelor friendship which they found completely satisfying. In March, however, two spinster ducks arrived on the scene and strove earnestly to persuade the drakes to modify their views on matrimony. As far as I can make out, they are not making much headway. Though not actively hostile, the gentlemen are not a bit interested. They are perfectly content to remain as they are, thank you !

* * *

COMPARATIVE STUDIES ON THE BEHAVIOUR OF ANATINÆ

By Dr. KONRAD LORENZ (Dulmen in Westfalen, Germany)

Reprinted by kind permission from *Journal für Ornithologie*, 1941.
(*Festschrift Oskar Heinroth*)
Translated by Dr. C. H. D. Clarke, Division of Fish and Wildlife, Ontario, Canada
(*Continued from p.* 34)

XX. THE MANDARIN DUCK

Aix galericulata (L)

A. GENERAL.

Doubtless this form is very close to *Lampronessa*, but it is not so close as one might think at first. Still, the separation of the two genera *Aix* and *Lampronessa* seems to me to be inconsistent with classifying together such different birds as the Mallard and the Wigeon in the genus *Anas*.

B. THE NON-SEXUAL REACTIONS AND CALLS.

These correspond in general to those of the Carolina Duck. The drake's call-note, however, is not separated from the burp as in the drake Carolina. A very nasal " Pfrrriub " takes the place of both calls. When this sound is uttered the hood is ruffled to its greatest extent (Fig. 50). The go-away and nest-hunting call of the duck is very like that of the Carolina, but the drake has, in contrast to the drake Carolina, no corresponding call, at least not so far as I know.

C. THE SEXUAL REACTIONS AND NOTES OF THE FEMALE.

1. *Inciting.*

This corresponds exactly to that of *Lampronessa.*

2. *The Coquette Call.*

This is louder and sharper than that of the Carolina, a sharp "Kett".

3. *The Flight Call.*

This constitutes an admitted gap in my observations. I am ashamed to say that I do not remember anything about it, neither did I make any notes in my diary on the subject.

4. *The Prelude to Mating.*

This is like that of *Lampronessa.*

D. THE SEXUAL REACTIONS AND NOTES OF THE DRAKE.

1. *The General Form of the Display.*

The Mandarin drake takes less interest in the presence of the female at the performance of his display than any of the *Anatidæ* that I know. Even more than with the Mallard the social display is an affair of the males. The males place themselves on show quite passively without being the least bit concerned about the presence of females, almost like Blackcocks, Ruffs, and other birds lacking true pair-formation. Correspondingly, in the social play of *Aix* those orientation-reactions in which other drakes, even the Mallard, give attention to the ducks which are present, are lacking, namely the turning of the head and of the back of the head. Only in the mock-preening is the drake oriented toward the duck, but this behaviour occurs very seldom in the social display. In the social play proper, the Mandarin drakes do not court one particular female, just as Peacocks, Turkey Gobblers, Black Game, or Ruffs never do. It is also surely no coincidence that this very species, where the active role in choosing a mate falls so entirely to the female, is at the same time the one with the most highly differentiated showy male plumage.

FIG. 48.—The position taken by the Mandarin drake, *Aix galericulata*, at the beginning of the social-play. Compare with Figs. 9 and 19.

2. *The Introductory Shaking.*

This plays a very small role. On the other hand, in the drake Mandarin the position from which it takes place in all *Anatidæ* which

have this behaviour, is carried to the extreme. The drawing in of the head, ruffling of the head plumage, etc., is more pronounced than in all other *Anatinæ* (Fig. 48).

3. *Drinking and Mock-Preening.*

These have become, in *Aix*, an absolutely linked behaviour-sequence but in the reverse order in which we saw them in the Gadwall. After an exaggerated drinking there follows a mock-preening (Fig. 49*a–c*) which is more formalized and marked by stronger morphological differentiation than is the case in any other duck. That is to say,

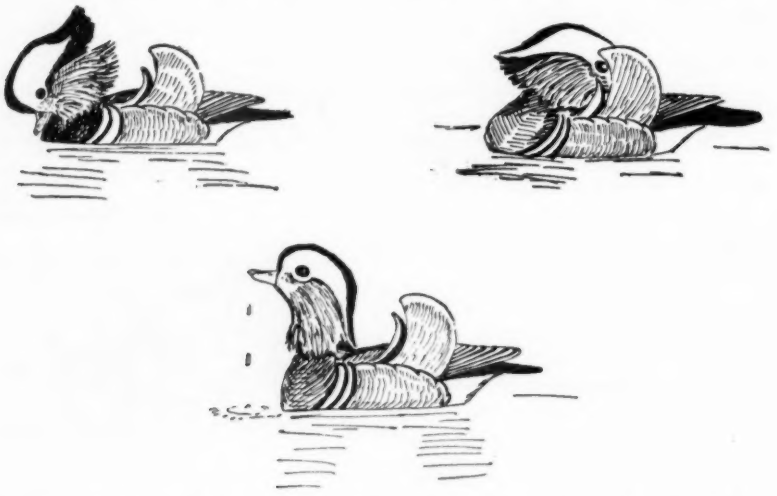

FIG. 49*a*, *b*, *c*.—The Mandarin drake drinking, linked with the mock-preening. Notice how the dark green posterior portion of the hood springs up, making the movement mimic-exaggerated. Compare the position of the plumage with Fig. 50.

the Mandarin drake touches the large rust-red tertiaries which are held up like a sail during every outburst of display from the inner side. The drake performs the drinking-and-mock-preening act very often when he is standing on the shore beside his duck. Then both mates drink at the same time, and thereupon the drake touches his beautiful plume, invariably the one on the side next to the duck. As he drinks his hood moves so that the movement is emphasized thereby (Fig. 49).

4. *Burping.*

This is most striking because of the great size of the lifted hood and beard feathers (Fig. 50). The striking feather ball, which is held up so jerkily, looks actually heavy. Simultaneously the drake utters a nasal " Pfrrruuiehb ", exactly at the moment of the maximum tension of the bone-drum. The extreme stretching and arching of the neck, together

with the corresponding movements of the plumage, result in a most grotesque spectacle. It looks almost as if the bird must put his neck out of joint.

5. *Display-Shaking.*

The Mandarin drake has no real grunt-whistle but he displays not less than three different behaviour patterns which have come from mimic-exaggeration of shaking. The first reminds one of the male *Tadorna's* display-shaking. First the head is lowered and then thrust up very high, while a whirring sound is uttered. We can symbolize the sound by these letters : " Fwwwwwwww." rrrrrrrrrrrrrrr One should try to pronounce the " w " and the " r " at the same time. It is voiced with this head movement. The hood is very much ruffled.

6. *The Double-Grunt-Whistle.*

This is a behaviour sequence peculiar to the Mandarin drake. It consists of two separate movements both derived from a displacement shaking. After an ordinary introductory shaking, often even without it, the drake dips his bill into the water about 5 cm. from his breast, shaking and squirting and then, continuing to shake, he thrusts it up again. This behaviour differs from an ordinary very hard shaking, such as we have seen in the females of *Aix* and *Lampronessa*, only by the movement being so exaggerated that the bill is actually dipped into the water in a way recalling the grunt-whistle of the *Anatinæ* and never occurring in the case of autochthonous shaking. Besides this, in this movement the drake utters a sound which I have designated in my diary as " Gnk-zit ", which expresses its similarity with a half-repressed sneeze fairly well. Immediately after this action and always linked to it, there now follows a second, which by its greater differentiation is still farther separated from shaking. With a sharp bend of the head, the bill is lowered vertically so that it dips into the water right in front of the drake's breast. The tendency to lower the head, which we have seen in the ordinary shaking of *Aix* and *Lampronessa*, is here mimic-exaggerated much more than in the previous movement. With a very brief shaking, the very curved neck is now thrust upwards, with which a short sneezing whistle is heard. I suspect that as a matter of fact only one right-left movement takes place, as in the true grunt-whistle of the Mallard and Pintail drakes. The body is not straightened

FIG. 50.—The Mandarin drake's burp. Compare Figs. 20, 24, 39, and 46.

up afterwards. One can say that of these two linked shaking ceremonies the first is barely differentiated from the ordinary introductory substitute-shaking. The second is more differentiated but it has remained, so to speak, half-way to the grunt-whistle. Therefore, both are clearly intermediate forms between a displacement shaking almost unaltered so far as the autochthonous shaking is concerned, and the grunt-whistle of the *Anatinæ*. Thus the derivation of the grunt-whistle from the shaking behaviour is made almost certain by the two connecting links formed by the movements of the Mandarin drake's " double grunt-whistle ".

7. *The Combat of the Drakes.*

This forms a very interesting chapter in the ethology of *Aix*. Like the males of many birds that have an extreme social display and extremely fine plumage, the drakes do not fight seriously. The shooting along beside each other, which is so distinctive of the combat behaviour of the drake Carolina and already tends with this species towards ritualization, exists in *Aix* only as a much more purely " symbolic " activity. As such, however, it plays an important role in social play. Heinroth is right in comparing this behaviour pattern of the drakes, as they shoot wildly around each other in this ceremony, with that of a crowd of whirligigs (*Gyrinus*).

8. *The Post-Coital Play.*

This consists only of non-specific gestures of excitement, among which burping, display-shaking, and aiming movements of the head can be named.

Summary

If one wants to formulate a classification of a group with any real success one must rid oneself once and for all of the idea that a linear arrangement of the forms can really represent the relationship existing between them. Naturally, this is true, too, when we spoke previously of the ducks " about in a line ". All animals living to-day are growing branch tips of a " family tree ", and can, *ipso facto*, not be derived from " one another ". The comparison of their characteristics results, therefore, in an arrangement which can be represented freely by the likeness of a family tree with branch tips like those of a small round-clipped beech or yew tree. They lie all together in one surface, which represents a cross-section through a bush growing outwards at one point *in time*. Just as we can only tell by guessing and judging appearances, because of the thick foliage of the tree which we cannot see through, as to which ends belong to a common branch and how far down they branch from the main stem, so the best systematic arrangement can only give us reasonable speculations about true evolutionary relationships.

I am now going to try to represent graphically, in a tabular diagram, what we have gained through that kind of systematic intuition which I tried to describe in the Introduction as a simultaneous review of as many characters as possible. Only by evaluating all accessible characters simultaneously can we achieve a proper judgment as to the relative value of individual characters. First of all we must make a brief deliberation of a fundamental nature. The similarity of a series of forms, even if the series structure arises ever so clearly from a separation according to characters, must not be considered as establishing a series of development stages. Let one imagine that, out of one common root, a number of forms have grown out, all equally old

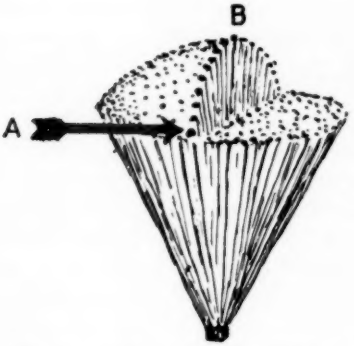

FIG. 51.—Diagram of a series of similarities in recent animal forms whose neighbouring members are not joined by close genetic relationship. When part of the lines of descent fall out, the rest of the forms, lying in the row A–B, can be mistaken for phylogenetic series.

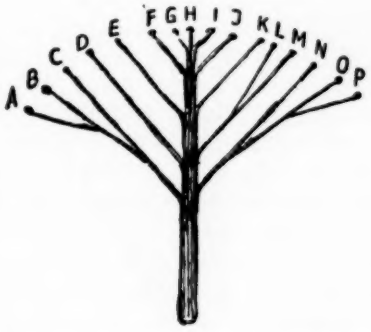

FIG. 52.—Diagram of a series of similarities of recent animal forms, resting on true phylogenetic relationship. Every two neighbouring forms in the row A–B owe their similarities to the part of the path of development that is common to them.

and equally differentiated from the root. We shall represent this family tree structure in Fig. 51 as a kind of shaving brush. Now let us imagine further that, as represented in one half of the brush, part of the hairs have fallen out in such a manner that the rest remain somewhat in the form of a fan. The tips then represent a step ladder leading from *A* to *B*, which would seem convincing evidence that the forms have descended " from one another ", especially if the degree of differentiation is less on one edge of the fan than on the other. Doubtless the endpoints of such a " family tree " have already often been taken for phylogenetical series, which unfortunately, places ever more welcome weapons in the hands of the opponents of the theory of descent. On the other hand, we must not fall into the opposite error to this too ready formation of series and generalize in the view, that all similarity of recent organisms might be explained from the principle of

fan-shaped classified lines of descent, as an over-generalization of Kleinschmidt's theory would imply. Doubtless there are very many cases in which not only a monophyletic development of large groups of animals has taken place, with many individual forms not splitting off till later, but also the further differentiation of the single forms, at least in respect to single characters, took place at such different rates that similarity lines arose as represented in the diagram in Fig. 52. However in observing these similarities which correspond to a phylogenetical staircase *one must not forget for an instant that the term " primitive " may be used only for one or several characteristics of a recent animal form, never for the form as a whole.* Even *Sphenodon*, or *Ornithorhynchus*, is not a " primitive animal ". The circumstance that some or even very many characteristics of such a form are quite certainly phylogenetically primitive, does not justify us in the presumption that all the rest of their characteristics are also primitive. The stopping of further differentiation of one character means nothing in respect to the course of differentiation of the others.

The " intuitive feeling " of the professional systematist, which we discussed in the Introduction, is generally well enough developed to decide between similarity series which rest upon a common descent, as has just been described, and such as arise through the previously discussed phenomenon of classified descent-lines arranged in a fan shape. In order to have a more objective criterion for this separation I suggest the following consideration of probability. If one grants that all the representatives of an animal group come from one source, independent and diverging, without nearer connections with each other, as represented in Fig. 51, then one would expect that the similarities of characters which determine the arrangement as to which lines of descent were to be placed side by side, would be divided rather equally over the whole brush. If, for the sake of simplifying the graphical representation we take a longitudinal section of the brush, getting thus a number of fan-shaped, diverging lines of descent, the similarities which bind each form to its systematic neighbour, would have to go through the whole sheaf of lines homogeneously, and especially from every point to both sides, hence, in the three dimensional sheaf diagram, to all sides ; binding species with species in like manner.

This type of distribution of characters actually occurs : in all so-called " circles of forms " (Formenkreise) this holds true and Kleinschmidt's theory of family-bushes (instead of family trees) is indubitably correct if applied to these cases. A Formenkreis is nothing else than a " shaving brush " in which the middle part has worn away, leaving a circle of hairs, representing the single forms.

Now if one represents characters held in common as cross connections and arranges the more general, older characters and those

common to the larger divisions of the group toward the base and the others more and more towards the periphery in proportion to the narrowness of their distribution and their degree of specialization and, consequently, their phylogenetic youth, there would be, in the ideal case of the diverging sheaf-like type of species-formation, a classification such as is represented in the diagram in Fig. 53.

Now we shall try to represent graphically, in the manner described, the group *Anatinæ*, using as many of their systematically useful characters as possible, in order thus to form an opinion as to how far their representatives can be put together in groups according to true phylogenetic relationship, and to what extent the evolution of their

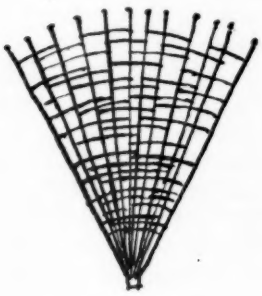

FIG. 53.—Diagram of the division of characters one would expect in unbranched lines of descent, diverging in sheaf-like form. As the variabilities and similarities are explained only by greater or lesser divergence, the distribution of most characters overlaps.

FIG. 54.—Diagram of the distribution of characters which is to be expected when lines of descent branch in the form of a tree. As the connecting characteristics are results of common paths of development, they are divided according to their common descent and do not intersect except for convergences.

species corresponds to the type of the sheaf-form diagram with diverging straight lines in Fig. 51. Although the sheaf of the lines of descent can be symbolized only in three dimensions we shall have to use several flat projections. He who is very particular about clarity may draw them thus and then glue them together so that they fit. I confess that I myself used, for the arrangement of the species, a bundle of stiff wires with thin wires representing " common characters " joining them together into sub-groups.

If one grants that not every species of a group of forms has developed quite by itself, independently from all others, a very different distribution of characters is to be expected. If several forms have only branched from one common ancestor after a long period, we can expect that they have in common such characters as have evolved during that time and that they differ in such characters as each

of them has developed since the time of its branching-off. If two branches grew away from each other very far down we are not surprised if they are connected only by very old characters common to larger group categories. Cross-connections in character distribution, as we have represented in Fig. 53, are not to be expected if, for the time being, we ignore the possibility of convergence. Fig. 54 shows the type of character distribution which is to be expected in a family tree as opposed to the family " bush " represented in Fig. 53.

In species where there is reason to believe that the lack of a character is not primitive but of secondary occurrence, this has been shown by a little cross at the intersection of the character connection and the line of descent. As is clear from the Table, the placing together into groups of common origin becomes more probable the nearer we move to the base of the sheaf of lines of descent, while for very many characteristics of more recent date clear cross-connections in the distribution of characters after the manner of Fig. 53 have yet to be found. Notice, for example, the distribution of the grunt-whistle, head-up-tail-up, and turning-of-the-back-of-the-head.

The few morphological characters, interspersed in the Table, are to show how similar their distribution is, in many cases, to that of behaviour traits. After filling in those gaps, which are especially obvious in the list of species investigated, I plan to construct a much larger diagram, built upon the same principle, in which will be entered all or nearly all the available morphological and behaviour characters, such as the fertility of hybrids. The publication of this Table must above all await the result of comparative studies of the drake's bone-drum, which is so very rich in characters that can be compared. Heinroth has left some unpublished material on this subject, as well as a very complete collection of bone drums.

Even in its preliminary incomplete state our grouping shows clearly the possibility of using the phylogenetic homology concept for characters of inherited behaviour. This fact, which it has been the principal task of my investigation to prove, is of the very greatest significance in comparative psychology.

EDITOR'S NOTE.—Dr. Konrad Lorenz has made a number of alterations and additions to the translation in view of his subsequent work on this subject since the publication of the original German text. The Table which concludes the paper has been re-drawn.

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ACKNOWLEDGEMENTS

The English translation of Dr. Lorenz's paper has been made available through the initiation of Mr. F. H. Kortright, author of *The Ducks, Geese, and Swans of North America.*

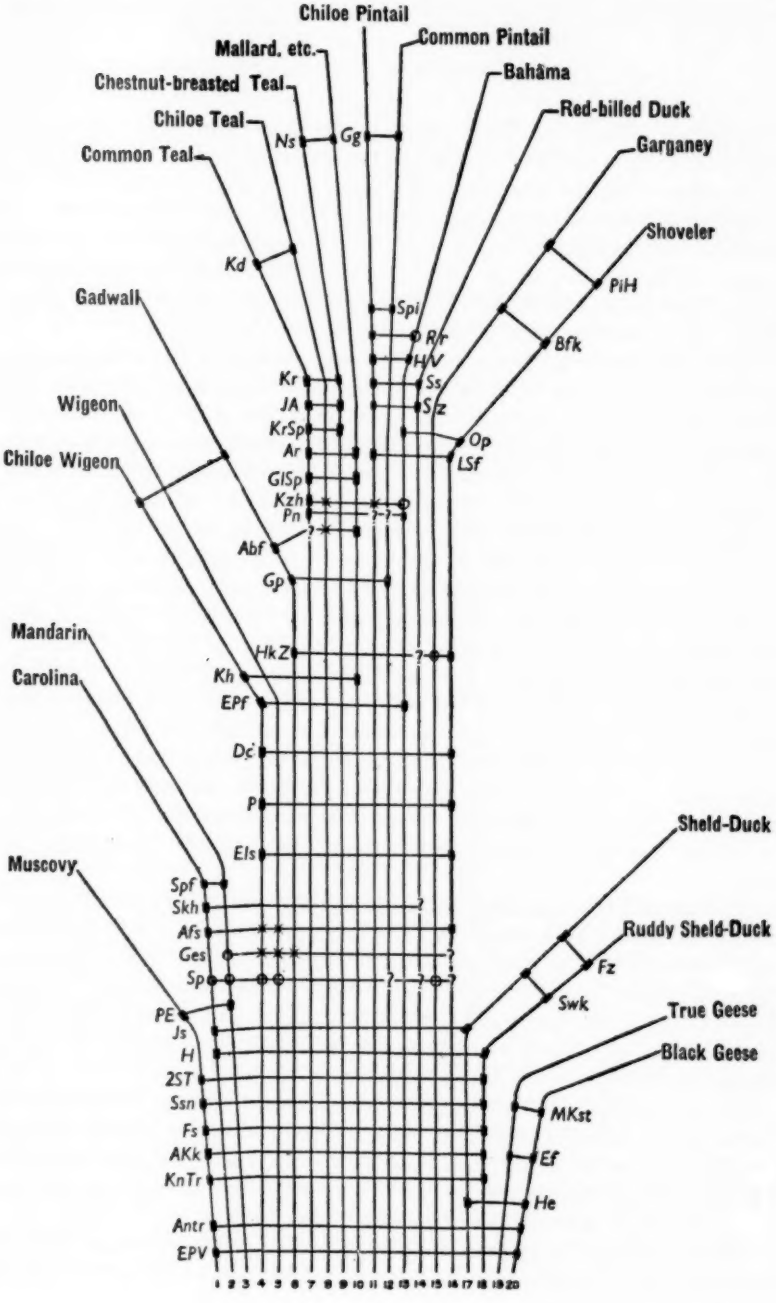
The blocks of the illustrations have kindly been loaned by Professor Dr. Erwin Stresemann, editor of *Journal für Ornithologie.*

EXPLANATION OF DIAGRAM

The vertical lines represent species, the horizontal ones characters which are common to these species. A cross indicates that the character in question is lacking in that particular species. A circle indicates an exceptional differentiation of a character in a species, a question mark ignorance of the author.

List of Species.—1 Muscovy Duck, *Cairina moschata*. 2 Carolina Duck, *Lampronessa sponsa*. 3 Mandarin Duck, *Aix galericulata*. 4 Chiloe Wigeon, *Mareca sibilatrix*. 5 Wigeon, *Mareca penelope*. 6. Gadwall, *Chaulelasmus streperus*. 7 Teal, *Nettion crecca*. 8 Chiloe Teal, *Nettion flavirostre*. 9 Chestnut-breasted Teal, *Virago castanea*. 10 The Genus Anas, Mallard, Spotbilled Duck, Meller's Duck, etc. 11 Chiloe Pintail, *Dafila spinicauda*. 12 Pintail, *Dafila acuta*. 13 Bahama Duck, *Poecilonetta bahamensis*. 14 Red-billed Duck, *Poecilonetta* (?) *erythrorhyncha*. 15. Garganey, *Querquedula querquedula*. 16 Shoveler. *Spatula clypeata*. 17 Sheld-Duck, *Tadorna tadorna*. 18 Ruddy Sheld-Duck. 19 Anser as a genus. 20 Branta as a genus.

Compared Characters :—*EPV* : monosyllabic piping of lost chick ; *ANtr* : Displacement drinking as a signal of peace *Kn Tr* : Bone drum in the trachea of male ; *AKk* : Duck-like markings of downy chick ; *Fs* : Glossy speculum on secondaries ; *Ssn* : Bill with lamellae functioning as sieve ; *2 St* : Contact-call of chick consisting of two syllables ; *H* : Inciting ceremony in female bird ; *Js* : Displacement shaking as a form of display ; *PE* : "Aiming" Intention movements of the head in pre-copulatory display ; *Sp* : Displacement preening behind the secondaries in the male ; *Ges* : Social display of drakes ; *Afs* : Burping ; *Skh* : The Duck's inciting movement backwards over the shoulder ; *Spf* : Feather differentiations enhancing the function of displacement preening ; *Els* : Preliminary shake ; *P* : Pumping as pre-copulatory movement ; *Dc* : Decrescendo call of the female ; *EPf* : Whistling in the drake ; *Kh* : Chin lifting ; *Hkz* : Turning the back of the head towards the female ; *Gp* : Grunt whistle ; *Abf* : Down-and-up movement ; *Pn* : post-copulatory display with bridling movement ; *Kzh* : Head-up-tail-up ; *Gl Sp* : Speculum identical in both sexes ; *Ar* : Bridling movement ; *KrSp* : Speculum parti-coloured black and green ; *Trkh* : Chin-lifting in the function of a "Triumph ceremony" ; *IA* : Bridling as an independent movement, not coupled with head-up-tail-up ; *Kr* : Teal Whistle (of two syllables) coupled with burping ; *Kd* : Teal whistle independent of burping ; *Ns* : Nod-swimming in the female ; *Gg* : "Geeee" call of true Pintails ; *Spi* : Elongated middle tail feathers ; *RR* : Rolling Rrrr call of female while inciting ; *HV* : Lifting of anterior part of body while inciting ; *Ss* : Markedly wedge-shaped tail ; *Sz* : Marking of bill with light spots on the side ; *OP* : Drake without a whistle ; *Lsf* : Lancet-like feathers on shoulder of drake ; *Bfk* : Small feather of wing light blue ; *FZ* : Small feathers of wing white, speculum glossy green, elbow feathers ruddy ; *SwK* : Down young marked black and white ; *MkSt* : Contact call of young with many syllables ; *Ef* : Downy young uniformly coloured, without sharp markings ; *He* : Dipping of the neck as pre-copulatory display.


Chiloe Pintail
Mallard, etc.
Common Pintail
Chestnut-breasted Teal
Bahama
Chiloe Teal
Red-billed Duck
Common Teal
Garganey
Shoveler
Gadwall
Wigeon
Chiloe Wigeon
Mandarin
Carolina
Muscovy
Sheld-Duck
Ruddy Sheld-Duck
True Geese
Black Geese
Ns
Gg
Kd
Spi
PiH
Rfr
Bfk
HV
Kr
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JA
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BREEDING SUCCESSES AND FAILURES IN 1952

By H. MURRAY (Brentwood, Essex, England)

From an avicultural point of view, the spring of 1952 opened for me in considerable gloom if not absolute disaster. Indeed, it was not until the autumn that my affairs began to assume a more rosy hue.

Over the years I had noticed that my strain of aviary bred British birds had nested earlier every year, but in 1952 for some reason they began earlier than ever before, and the middle of March saw both Lesser Redpolls and Siskins with nests and the former with eggs. These nests were a good eight weeks before their usual time.

As many people will remember, the end of March was accompanied by a very heavy snowfall which caused the destruction, or brought about the desertion, of many nests of Thrushes and Blackbirds and other early nesting birds. I should imagine that many of the parent birds died as well. It is certainly true that in the area in which I live, a district in which both Thrushes and Blackbirds abound, only two young Thrushes survived from the first round of nests.

In the aviary things were even worse, and all the Lesser Redpolls and Siskins died, both cocks and hens, presumably killed by the cold striking them when they were in breeding condition. By the time I was able to catch them up and bring them in it was too late.

Curiously enough the Bourke's Parrakeets, which are generally regarded as not completely hardy, but which had also gone to nest early, sat closely all through the snow and hatched and reared their young. I am fairly sure that the cock slept out in the open all through that bitter week-end. My old hen Cockatiel also died about this time, and the cock bird was forced to spend the summer as a very unwillng bachelor ; but a hen seemed quite unobtainable at that time.

By chance I had obtained a fine hen Orange-headed Ground Thrush, and I thought that I would have a chance to breed these lovely birds, as I already had a good cock bird, but here again my hopes were dashed. The hen by some means best known to herself, wedged herself into a corner of the top of the aviary, and presumably could not get out again, and died there. I brought the cock bird in, but of course another pair of birds had come adrift.

To crown it all, the very night that I released the small birds in the large aviary I had a visit from owls, and lost one or two birds in night frights. Once birds are really familiar with their surroundings owls do not seem to disturb them, but when birds are freshly turned out they are much more prone to panic.

Among the birds injured that night was a very fine cock Yellow-billed Cardinal, one of a pair with which I had great hopes of breeding

this species. He damaged the top of his head, but recovered later, although he made no attempt to breed. I had taken a corner from my large aviary to make a quiet spot for them. Perhaps 1953 will be more fortunate. Before leaving the subject of these Cardinals I would like to mention that these birds have the very un-Cardinal-like habit of hanging upside down on the roof of the aviary in the same manner as tits.

I must confess that by the time the breeding season came round I was strongly inclined to go in for stamp collecting or knitting, or one of the less hazardous pastimes.

About the beginning of May I was in a dealer's shop, endeavouring to make up my pairs of birds, when I noticed an extremely handsome pair of small parrakeets of a kind quite unknown to me, and was immediately keen to own them. As they were rather expensive and I had seemed to spend a lot of money recently on birds, I decided not to buy them but, as any aviculturist will realize, I went back a day or so later and bought them. They were White-eared Conures, and, I should say, a true pair.

I thought a lot of these birds, as they were bright and not too noisy. After a few days I turned them into an aviary containing a nest-box, and was soon very pleased to see them enter. The hen started to sit and the cock slept in the box with her. When after six weeks nothing had been seen or heard of the hen I became very bothered about her, but as the cock still slept in the box I thought that things must be going on satisfactorily. Then the cock sickened, and I went in and looked in the box. The hen was dead and had been for weeks, and the cock, probably owing to sleeping with the dead bird, also passed away.

I feel that having given such a long description of my troubles, it is only right to show a little of the other side of the balance sheet.

The Bourke's Parrakeets, as mentioned earlier in this article, had sat throughout the snowfall. They reared three young successfully in the first round and one in the second. These were all reared without any bother. In my opinion the Bourke's Parrakeet is one of the most charming and attractive of the birds known to the aviculturist. The young are so delightfully tame and will allow themselves to be stroked at feeding time. Also I like the way that the cock bird comes to meet you when he has young birds to feed, and the lovely soft colourings he shows as he flies. Their call too is quiet, and in many ways they work their way into one's affections. I have not kept a very large number of parrot-like birds, but one would have to go a long way to beat a Bourke's as a friendly little pet. Unlike other people, I have not found Grass Parrakeets safe with other birds.

In the summer of 1952 I also had considerable success with Guiana Parrotlets. This little parrot carries no blue except on and under

the wing, the general colour being a medium green. This colour varies over the bird and turns it into an attractive little fellow. The hen is more yellow, particularly on the face. In the eyes of these birds, their greatest glory seems to be the blue on the underside of the wing. When displaying the wings are held away from the body and the blue well displayed. It seems to be a fairly general rule with birds that they show off their more unusual colours when courting, even though in many cases these are not so spectacular as their ordinary markings. The display of the white in the wing and tail of a Chaffinch and the white rump of a Bullfinch are two cases in point.

I obtained the parent birds in the summer of 1951 and no attempt at breeding was made in the first season. When first arrived these birds were very wild. During the winter they were kept in a cage in the birdroom and wintered with no bother. Their cage was actually in the large aviary in which the small birds were wintered, and it was a most amusing sight to watch the behaviour of an odd cock Greenfinch that was in the flight. As the spring advanced he came into full breeding condition, and being without a mate of his own kind decided that the hen Parrotlet would have to do as a substitute. He spent hours against the cage trying to feed the Parrotlet with both the cock and hen Parrotlet screaming with rage at him and trying to grip some portion of his anatomy. Like a wise bird he kept his feet outside or his toes would soon have paid forfeit. Mr. Enehjelm keeps his Parrotlets with his Waxbills and other small fry, and even breeds them in his mixed flights, but my birds seemed very warlike, and with their powerful beaks they seem more than a match for any normal finch.

In May the Parrotlets were let out into an aviary about 6 feet by 4 feet, containing a Budgerigar nest-box partially hidden by a branch of gorse, and it was not long before they went to nest. The first egg was laid about the 11th May, and the hen sat very closely. Apparently the cock fed the hen bird on the nest. Young were heard on the 6th June and, as was to be expected, sounded very like young Budgerigars. The hen continued to sit very closely, with the cock feeding his complete family. Indeed, it was not until just before the young flew on the 1st July that I saw the hen again.

The first brood consisted of three cocks and one hen. The young were easily sexed as there is no immature plumage. The colours brighten as the bird gets older.

The young Parrotlets flew on the following dates, indicating a rather long interval between eggs for so small a bird—1st July, 3rd July, 6th July, 9th July. All the young were perfect and differed very little from their parents. As always with a brood of birds that one has succeeded in rearing, the family made a pretty picture. The whole family, both parents and youngsters, slept in a clump under

a piece of wood near the roof. The young birds commenced feeding themselves soon after leaving the nest, and seemed particularly fond of timothy grass thrown on the ground. I have yet to find a seed-eating bird that does not relish this food.

Feeding the birds while the young were in the nest was fairly straightforward. The birds' staple food of a mixture of groats, canary seed, hemp, sunflower, and millet was given with the addition of soaked seed and spinach stalk. The birds were really as easy to rear as Budgerigars. Green food was a bit of a problem at first. The only kind that the cock bird would look at at the beginning was seeding forget-me-not. Later he ate spinach.

The hen Parrotlet started sitting again about a week after the young left the nest, and reared another nest of young ones—two pairs this time. I was very pleased at my success with these birds, as it seems to be some years since they were bred, but as appears to be the case with many parrot-like birds, once the pair decides to nest they usually make a good job of it. The main difficulty seems to be to get a true pair of birds in the right condition and frame of mind.

Hawfinches proved a disappointment again this year. They nested but the hen died with laying her first egg.

Shamas also nested without result. The hen had bad egg-binding every time she laid, and never managed to lay her eggs in the box. The cock sang beautifully all the summer and would very willingly have murdered any bird he could have reached. During the previous winter the hen Shama had been given a large flight and a heated shelter, but I am inclined to think that the trouble with egg-binding may have been caused through her having become cold at times in the winter. It must, however, be said that she showed no signs of distress at all, but was always in the best of health and spirits.

An attempt was made to breed three species of Cardinals—Green, Scarlet, and Yellow-billed, but none advanced further than nest building. The little Pygmy Cardinal or Black-crested Finch which I bred in 1951 would, I think, have bred again, but I only had a hen bird. She nested and laid, but of course the eggs were clear.

Green Avadavats reared two good youngsters.

A cock Cordon-bleu paired with a hen Blue-breasted Waxbill and reared four fine youngsters, three in the first nest and one in the second. After their moult one of the cocks showed a faint touch of red on the ear, but the birds undoubtedly favour the Blue-breast. It is generally believed that a young bird obtains most of his colouring from the cock bird, but in these youngsters the Blue-breast is undoubtedly the dominant bird for colour. Can this mean that the Blue-breast is the parent stock and the Cordon-bleu a later variation?

These young birds were reared mainly on seed, but the parents

also ate considerable numbers of mealworms and black fly. The nests were built in a branch of gorse and were simply a small bag of finely woven grass. The nest was practically unlined, and appeared to be built by the cock. He also took his turn at incubation and feeding the youngsters, and was in fact a model parent.

Black-cheeked Waxbills also nested, and one bird sat very closely although no eggs were laid. The nest was very similar to the Cordon Bleu, and it seemed a pity that they did not rear youngsters as they are such attractive birds. This particular pair have now been wintered three times and it is hoped that in 1953 they will breed.

Live food seems to be essential for Black-cheeks, and soaked seed is also relished, but one of the greatest treats that can be given to any seed-eater in the winter is a seed box planted with annual grass and chickweed and brought into the warm until it has grown up fresh and green. All seed-eaters like this, and it cannot be otherwise than highly beneficial to them. This particular pair of birds was exhibited at the 1952 National Show, and I was very perturbed to see that the hen looked very sick after the three days' show. The birds were immediately released into the indoor aviary after their return, and both flew at once to a pot containing cut up dates, which they ate greedily. I am a great believer in dates for softbills and fruit-eaters generally. Cuban Finches and Diamond Sparrows are very fond of them also. It may be that the Black-cheeked Waxbill needs a sweet fruit of this nature to keep it in condition. My experience with these birds has been similar to the general run ; very easy to keep in the summer out of doors, but prone to enteritis and sudden death when brought in for the winter.

Nests were built on the ground within a few feet of one another by both Red-eared Waxbills and St. Helena Waxbills. As the nests were on the edge of a tiny bank near the side of the aviary it was reasonably easy to keep them under observation. It is well known that the St. Helena is one of the more easily bred Waxbills, while the number of successful rearings of Red-ears can be counted on one's fingers.

Why this should be I cannot see, as Red-ears have nested and laid with me every year, but they seem to desert before the eggs hatch. I have always considered that this is due to having more than one pair of the birds together. When one considers the hundreds of thousands of these birds that have been imported and kept under all sorts of conditions over the last century this lack of breeding success becomes even more curious. I was therefore very interested in watching the activities of these birds. The nest was the usual rough ball of woven grass with the entrance at ground level and covered with a tiny porch. The cock built his little half open nest on the top, and the whole edifice was covered by a clump of milk thistle. Several of the large leaves of this plant were either hanging down over the nest or lying on the

ground. It was pretty to watch them go to roost at night. The hen had a special route that she always followed. This track started about two feet from the nest and led through the stems of the milk thistle, reaching the ground about a foot from the nest. She then crawled and wriggled her way under the leaves lying on the ground until she could slip into her nest. The cock did not bother so much about concealment, but flew down to his nest. I was both interested and surprised to see that the cock and hen did not sleep together in the proper nest, the cock keeping to his upstair bedroom.

The nest of Red-ears went the usual way, but with the St. Helenas things were more satisfactory. Their nest was a few feet from the other one, but appeared to be the same except for the cock's nest on top. As usual with Waxbills, I had no certain knowledge that there were any young, until after about six weeks from first sitting a fine youngster flew. He was a cock with ear patches and a rosy tint on the abdomen. He was a fine large bird. Greatly to my surprise two other youngsters flew at the same time and apparently from the same brood. They were small brown birds with no trace of any red about them. The parent St. Helenas fed all three birds, so presumably they flew together. It was the wide difference in the birds that surprised me—one bird a true St. Helena in full colour, and these two much smaller birds with no red at all. No colours appeared at all until the moult, and then the birds, after appearing to be Red-ears, turned into a sort of cross between a Red-ear and a St. Helena. I still have these birds and shall try and breed with them this year. At the beginning I thought that the Red-ears had laid in the other nest, were in fact partly parasitic. This would account in part for the small number of successful breedings of this species, but I now think that the youngsters were hybrids. I had proof last year that this can happen when from one nest of Linnets I reared two Linnets and two Redpoll-Linnet hybrids. This time I think I have one true St. Helena and two hybrids. Perhaps someone who has bred St. Helenas before may be persuaded to give details of immature plumage. It may be that hen birds do not assume adult colour until the moult, while the cock birds fly from the nest with full colours. I find this hard to believe, but would be pleased to hear more about it.

Black-chinned Yuhinas provided another near miss. I had had these birds for two years and had never considered them a true pair. No sign of any display was ever seen, although the birds were always together and seemed very fond of one another. Even a separation of a few feet was sufficient to make them call constantly. They commenced nesting in early May, and constructed a half-roofed nest in a wire cylinder. Four eggs were laid of a dull browny-green colour with darker markings. The nest was built with strands of opened string and lined with wool. The birds certainly behaved like a true

pair, and relieved one another regularly at the nest. Also I believe that one bird slept in the shelter. After about a week both birds were seen to be sitting together, and I became convinced that they were both hens. After a time I took the old nest away and both birds built separate nests, but no more eggs were laid. It was a pity that they did not breed, as I understand that they have never been bred in England so far.

Ruficauda Finches started the season badly, but finished a little better. In the spring I had two of these birds that I thought were a true pair, but the " cock " turned out to be a hen, and the two birds then built a joint nest, laid ten eggs between them, and spent some months happily brooding clear eggs. About the beginning of August I learned that Mr. Vane had some spare cock birds, of which I procured two and turned them into the large aviary with the hens, first taking away their old nest. Although the cock birds seemed interested enough in the hens, the two old ladies, doubtless considering that they got along very comfortably without the complications arising from marriage, decided to stick together and built another nest in which they laid seven eggs which they commenced to brood. A cock bird approaching the nest was a signal that brought an amazon forth to drive him away. The male birds looked rather foolish having to sing and display at a safe distance.

I myself took a rather dim view of this ultra-militant feminism, as I naturally thought that all the eggs would be clear, but the birds did not take the matter to extremes, and in due course all seven eggs hatched. Even when the young were in the nest the cock birds were never allowed near them or to feed them. Owing to the very wet weather only two young birds were reared. It may perhaps be as well to mention that I have proved that both of the hens are in fact true hens. Both have been egg-bound !

In conclusion I would like to put on record a very unusual occurrence ; in fact it comes nearer to thought as we understand it than anything else that I have observed myself. The interpretation of the facts will probably differ, but the truth and accuracy of them are absolutely guaranteed.

Many of our members have bred Cuban Finches, indeed these pretty little birds are nearly as easy to breed as Zebra Finches as long as they have an aviary with no other birds of their species with them. The cocks fight furiously among themselves, sometimes to the death, but with other birds they are peaceful and friendly.

As their name implies, they come from a very warm climate ; indeed so little do they bother about the weather that their nest, a small bottle affair usually fixed to the outside of a gorse branch, and not built in its shelter, is so thin that the sky can be seen through the roof and the sitting birds and eggs through the base. As another instance

of their being accustomed to extreme heat, they do not brood the eggs in the same way that a normal bird does, but only return to the nest for about five minutes in the hour. Indeed the only way that one can be sure of eggs, apart from an examination, is to notice that the adult Cubans keep a very close watch on the nest, any other bird going near being immediately driven off.

My pair of Cubans consisted of a cock bird that I had bred the year before and a newly imported hen. No attempt was made to nest until well into August, and it was not until the 31st that I heard the youngsters being fed.

As some of my readers may remember, the week-end of the 6th–7th September was accompanied by a very heavy frost. On the morning of Saturday the 6th I went to the aviary expecting to find the parent birds had deserted the nest and the youngsters dead. This is the usual happening with all birds, both British and foreign, when struck by an unexpected frost. To my surprise when I approached the aviary I found both of the parent Cubans frantically pulling wool out of old nests and carrying it back to their own. This was then taken inside, roughly placed in position by the beak, and the bird then stood under it and placing its shoulders under the wool it stood up on its toes and forced it into position with its back. All Saturday the birds worked furiously, and all Sunday as well. The young were fed at odd times and screamed constantly for food, but the parents paid little attention to them, but carried on with their work. By Sunday evening the nest, which on Friday had been the size of a man's first, was as large as a football. A great mass of loosely held together wool with the sides about three inches thick. On Monday night it rained and the nest was washed half away from the branch. On Tuesday and Wednesday the young flew, and more rain on Thursday brought the whole nest to the ground. Two out of the three young were reared, and I still have them.

This incident raises several interesting queries. How did these tiny birds, with no possible race memory of frost, know how to react correctly to the danger? Perhaps some of our members have had similar experiences or have noticed the behaviour of these birds in the West Indies. Being in the wool trade I prefer to think that even Cubans can read advertisements, and that they believe "that there is no substitute . . ."

* * *

HYBRID SONNERAT'S JUNGLE FOWL

By DAVID M. JOHNSON (Washington, D.C., U.S.A.)

The article contributed by me about a year ago to the Magazine appears to have aroused great interest, and I have received many letters of inquiry. It gives me great pleasure to share with my fellow members of the Society the results of my further research into this most interesting subject. I have even had a Kodacolour print made of a painting I have done of some of these hybrids.

It would seem that this question of Sonnerat hybrids has not hitherto received the attention it deserves. I have seen a list of at least seven books in which reference has been made to the contribution made by Sonnerat's Jungle Fowl to any breed of domestic poultry and all deny any such contribution or any relationship. One of these books goes so far as to say : " The resemblance between this Grey Jungle Fowl and the domestic is great, and it was believed that this would prove to be the ancestor of the domestic fowl. This is not the case, however ; the two species do not cross, or if they did interbreed, the hybrids of this cross are sterile." I may say that it is not my opinion that the Grey Jungle Fowl resembles the domestic fowl in appearance, and my own researches show that hybrids are not always sterile.

There is another reference in an old British book. Dr. Danforth, of Stanford University, who has done extensive pheasant research in genetics and intergeneric as well as interspecies crosses in pheasants, has kindly sent me his papers and a reference in an old British book to a Grey Jungle Fowl running free with bantams in England, crossing with them, but the offspring were finally absorbed in the bantams. This was in the year 1870.

It seems strange that Man has treated so lightly, even indifferently, a subject which is so related to Game Birds and also to poultry, in its many phases of interest and study.

The records of our Society seem brief and incomplete in this particular subject, and I am happy to be able to contribute my findings. By autumn I hope to report my findings in my research on three-quarter Sonnerat's cockerels and Cornish Indian Game Bantams.

I have referred to a picture I painted of Sonnerat's hybrids, and if it is not possible to publish it in the Magazine perhaps it could be retained in the records of the Society, so that any member who wished to see it could do so. At the time I painted this picture the cockerels were under a year old and the feet and legs were then yellow. But at a year old the feet and legs turned red, as in their sire, the cock *sonneratii*, and while the cock bird superficially resembles the Red Jungle Fowl (*Gallus gallus*), the chest would indicate *sonneratii*, as well as the underglow. The shape of the feathers, too, resembles *sonneratii*, but the comb

takes after the mother's side, the *Gallus gallus*. The hen hybrids are, however, so like the Grey Jungle Fowl hens that it would take an expert to distinguish them. In their voices and calls the hybrids more resemble *sonneratii*, which differs from *Gallus gallus* in this respect. The hybrids do not seem to prefer domestication as do the Red Jungle Fowl.

I will now comment briefly on the three-quarter *Sonneratii* hybrids, with which I propose to deal more thoroughly at a later date.

These birds were the produce of five-month-old cockerel *sonneratii* hybrids and an old hen *sonneratii*. They were hatched in September and the clutch were 100 per cent fertile. They grew up in adverse weather conditions and during a winter of almost continuous rain and frost. Their hardihood was astounding. One three-quarter hybrid pullet refused to be weaned but is nevertheless this year assisting its mother in incubating. She looks exactly like a *sonneratii*. The two brothers, three-quarter *sonneratii*, resemble a Grey Jungle cock in appearance, especially one of them which has almost no comb. I have provided these with a Cornish Game Bantam as mate and they are compatible. I have chosen the Cornish Bantam for two reasons. One reason is they have no superfluous comb and wattles and the other reason is that some experts believe that the Indian Game Fowl itself is something other than *Gallus gallus*, which prompts me to research along these lines. I have found the three-quarter *sonneratii* hybrid to be inherently wild. They seem to think of nothing but eventual escape, even more than the pure wild Grey Jungle Fowl, which will settle down somewhat. These hybrids are highly prolific, producing an abundance of eggs, as in poultry, and the maternal instinct is strong. Egg-laying is not strictly seasonal, as in *sonneratii*, and the cock bird is in season at all times. This is not so in the *sonneratii* cock, at least, as its breeding season is strictly in spring and again in autumn. Its reproductive qualities go into eclipse with the summer moult.

I have been impressed with the apparent potentialities of the hybrids, in their varying degrees, as offering possibilities as a game bird if a suitable habitat can be worked out. This, of course, should be done by a system of trial and error by the younger generation of aviculturists. There seems much promise here for the covert. The food of *sonneratii* and its hybrids should be easily found. It seems to consist more of living creatures, such as insects and worms, and its demands on a grain diet are less than the other species of *Gallus*. Its alertness, virility, and intelligence seem remarkable.

It is to be hoped that others will carry on this work, so that this bird of unlimited energy and virility may be established in parks, estates, and preserves.

* * *

HOODED COCK AND MANY-COLOUR HEN HYBRIDS

By PROFESSOR E. SPRAWSON (Kenley, Surrey, England)

I was very much interested in the final paragraph of " News and Views " on page 70 of the March–April issue of the AVICULTURAL MAGAZINE, concerning the breeding of hybrids from Hooded cock and Many-colour hen Parrakeets, and their great likeness to the Paradise Parrakeet.

Though neither a prophet nor the son of a prophet, I have for many years thought that this would be so, and there were several reasons which led me to think so, as follows :—

The areas occupied by the Hooded and Many-colour (illustrated in Neville Cayley's *Australian Parrots*) might well, on occasion, overlap on the western border of Queensland ; and that occupied by the Paradise Parrakeet actually does overlap that of the Many-colour in Southern Queensland, so that opportunity for the occurrence of natural hybridization may be said to be present. (It also seems well within the range of possibility for the Golden-shouldered to overlap and hybridize with the Many-colour.)

The differing nesting sites do not, I think, count for a great deal. I have had Hooded Parrakeets dig a hole and nest in an ant-hill here in Surrey (Mr. Boosey published the photograph), I have also had them nest in the ordinary parrakeet nest-box, such as was used by Many-colours ; and did not Canon Dutton record that his Paradise Parrakeets attempted to burrow into the wall of a room—presumably to nest ?—though he did not say how high above the floor level they burrowed, but only that had they gone in they would have got into a loft—and yet it is also known as the " Ant-hill " Parrakeet. Cayley also records the wild Paradise as occasionally nesting in holes in trees and stumps.

Colour and colour distribution. It is an old saying concerning hybrids—and with some truth in it—that they are " coloured like father and shaped like mother ". Shape hardly comes into account here, as both Hooded and Many-colour are very graceful birds and of not dissimilar shape, though the Hooded is rather slimmer. The Paradise, which I have never seen alive, appears to be slim also in the photograph in Cayley's book.

The Hooded father would give the black cap to the hybrid—but lessened in area (as in the Paradise).

The crimson patch on the wing I would expect in such a hybrid ; the Many-colour hen has a small red wing patch and the wing patches of the young males as they leave the nest are considerably redder than are those of adult males—which looks as if the yellow patches of the adult males were a later evolutionary production ; the red wing-

patch in the hybrid might then well be a reversion to an ancestral colour. The coloured wing-patch in the Paradise, too, is in size between those of the Hooded and Many-colour males.

The Hooded father would also give the turquoise blue to the rump and upper tail coverts, and the brown to the back. The red colour of the patch on the cock Many-colour's nape might well be transferred to the frontal band on the forehead of the hybrid (as in the Paradise) ; besides, the frontal band in the hen Many-colour is often reddish, and that, too, might influence the production of a red frontal band in the hybrid.

To my mind, some other hybrids which were bred some years ago by Mr. Boosey : Red Rump × Hooded, and Brown's × Red (Eastern) Rosella, and which were of great interest, tended to confirm these views, and I then put forward my view that the Hooded cock × Many-colour hen hybrid ought to be almost exactly like the Paradise—hoping that Mr. Boosey would be able to produce it if I could not myself—we both had Hoodeds and Many-colours in those days.

One thing, however, puzzled me extremely : the Brown's × Red (Eastern) Rosella hybrid was at first sight a Brown's with a deep blood-red cap instead of a black one—and a very beautiful bird ; now Gould records of Brown's : " I have one specimen also with the whole of the crown of the head a deep blood-red and others with more or less of this colour," though he regarded it as unusual, but he does mention the occasional occurrence of a band across the forehead—which Cayley also mentions. I believe no one since has ever seen such a specimen as Gould here records, yet Mr. Boosey produces an exact replica by hybridization, and the distribution areas of Brown's and the Red (Eastern) Rosella are almost at the opposite ends of Australia !

Presumably Gould's bird could not have been a hybrid—or at any rate a recent one, though perhaps a throw-back to one in a very remote past, when their areas of distribution were not so widely separated.

Without going into detail there are, in many groups of Australian parrakeets, considerable variations within the range of normal with regard to colour, quite a number of which are grouped as sub-species. So also with broods of apparently normal birds : I have seen them vary considerably even in the same nest, showing I suppose, that although the parents are apparently of the same type their blood must have been mixed with that of some of their adjacent sub-species. Indeed, the evolution in colour in many Australian parrakeets appears to be in a very fluid state, and such that if one could isolate certain types, new sub-species might almost be produced at will.

If then the Paradise originated as a fertile hybrid, such variation might account for any differences that may be found between the hybrids Sir Edward Hallstrom has produced and the naturally wild species—if, indeed, there are any.

Apart from producing imitations of known species by means of hybridization I have often thought that the hens of the more colourful varieties of Bluebonnet might give wonderful potentialities for the production of new colour schemes with male Hoodeds and Many-colours, but so far I do not think many hybrids have been bred with the Bluebonnet. I am not really fond of hybrids but think we may have a lot to learn from them, particularly if they turn out to be fertile.

I hope Mr. Turner will keep us fully informed as to the progress of these hybrids and if they prove fertile, and may I suggest that Sir Edward Hallstrom try the Golden-shoulder cock × Many-colour hen hybrid also, and tell us all about both sets of hybrids from time to time, ultimately perhaps with coloured illustrations. Please do, Sir Edward—they are all such beautiful creations and we should be so grateful to know if another species (?), namely the Paradise, could have been produced by natural hybridization in the past—as well as by artificial hybridization in the present.

* * *

A DIARY FOR 1952 OF NEW ARRIVALS IN THE BIRD DEPARTMENT OF THE BROOKFIELD ZOO AT BROOKFIELD, ILL.

By KARL PLATH, Curator of Birds, Chicago Zoological Park, U.S.A.

JANUARY

An immature Florida Gallinule (*Gallinula chloropsis cachinnans*). This species is practically identical with the one found abroad.

FEBRUARY

*Japanese Robin (*Erithacus akahige*).

Azure-winged Magpie (*Cyanopica cyanus*). These two birds were the gift of our Avicultural Society's member, Alex Isenberg, of Palo Alto, California. The Robin is a beautiful little bird much like the Robin Redbreast, but having the whole head and breast rust colour, with a dark band across the lower breast. The Magpie is a fitting mate to our old male.

Female Cordon-bleu Waxbill (*Uræginthus bengalus*).

Births.—1 Green Shell Parrakeet, 1 Sky-blue Shell Parrakeet (*Melopsittacus undulatus*) and 1 Goldie's Lorikeet (*Psitteuteles goldei*).

APRIL

Bleeding-heart Pigeons (*Gallicolumba luzonica*) from the Gibson Ranch, St. Helena, Montana.

Young male West African Ostrich (*Struthio camelus spatzii*) from Hagenbeck at Hamburg, Germany.

May

Mearn's Quails (*Cyrtonyx montezumæ*).
*Benson's Quails (*Callipepla bensoni*).
Scaled Quails (*Callipepla squamata*).
*Hybrid Scaled × Gambel's Quails (*Callipepla* × *Lophortyx*).
These are all beautiful birds; the first two being especially showy.
Blue Peafowl (*Pavo cristatus*).
Black-shouldered Peafowl (*Pavo cristatus* variant).
*Fischer's Lovebirds (*Agapornis fischeri*).
Common Troupial (*Icterus icterus*).
Palm Warbler (*Dendroica palmarum*).
Myrtle Warbler (*Dendroica coronata*).
Veery Thrush (*Hylocichla fuscescens*).
*Bonaparte's Gull (*Larus philadelphia*). The first one of this abundant little gull (in Spring and Fall) that I have ever seen in captivity.
Humboldt Penguin (*Spheniscus humboldtii*).

June

Java Sparrows (*Padda oryzivora*).
Bluebirds (*Sialia sialis*).
American Goldfinches (*Astragalinus tristis*).
Grey Parrot (*Psittacus erithacus*).
Sora Rail (*Porzana carolina*).
Sparrow Hawks (*Falco sparverius*).
*Long-wattled Umbrellabird (*Cephalopterus penduliger*).
*Black and white Manakins (*Manacus manacus*).
*Blue-capped Manakins (*Pipra velutina*).
*Greater Rufous Motmots (*Uraspatha martii*).
*Red-bellied Trogon (Masked Trogon) (*Trogon personatus*).
Scarlet Flycatcher (*Pyrocephalus rubineus*). Within the month of September the male of this gorgeous little bird lost all of its scarlet colour without an obvious moult. Where it had been red it is now pure white with a slight tinge of pink on the crest. The wings and tail are as before, blackish-brown. This is quite different from the experience of Dr. Joachim Steinbacher (Frankfurt-am-Main, Germany). His male assumed a speckled grey dress probably much like that of the female. Our female shows the spotted markings a trifle paler than in his illustration and it still has the pinkish tinge on the lower abdomen. Dr. Steinbacher's article appeared in the May-June, 1952, issue.
*Turquoise Jay (*Cyanolyca turcosa*). A most beautiful blue bird with a black band surrounding the brighter blue throat.
Yellow Sparrows (*Auripasser luteus*).
Shama Thrush (*Kittacincla macroura*).

Cordon-bleu Waxbills (*Uraeginthus bengalus*).
Nonpareils (*Passerina ciris*). Purchased under the name of Butterfly Finch, but they have since replaced their dull yellow underparts with the normal scarlet.
Lavender Finches (*Estrilda caerulescens*).
Crowned Cranes (*Balearica pavonina ceciliæ*).
Common Sheld-Ducks (*Tadorna tadorna*).
*Bar-headed Goose (*Anser indicus*).
*Sun Bittern (*Eurypyga helias helias*).

JULY

Sora Rail (*Porzana carolina*).
Purple Gallinule (*Porphyrula martinica*).
Piping Guan (*Pipile cumanensis*).
*Taczanowski's Yellow-tailed Oriole (*Icterus mesomelas taczanowski*).
*Chestnut-crowned Redstart (*Myioborus ruficoronatus*).
Blue Jay (*Cyanocitta cristata*).
Least Bittern (*Ixyobrychus exilis*). The most beautiful of the smaller herons, but seldom seen and not easy to keep in captivity.
Snake Birds (*Anhinga anhinga*).
*Schalow's Touraco (*Tauraco livingstonii schalowi*). One of the handsomest.
Killdeers.
Flicker (Golden-winged Woodpecker) (*Colaptes auratus luteus*).
Swainson's Lorikeet (*Trichoglossus hæmatod moluccanus*). This bird escaped from its outdoor flight four years ago. It was brought in by its second owner since then.

AUGUST

Blue Jay (*Cyanocitta cristata*).
Imm. Yellow-crowned Night Heron (*Nyctannassa violaceus*). Curious because its northern breeding range is but until recently 250 miles south of Chicago. It was taken in the Chicago region. Normally breeds in the southern states.
Bar-head Goose (*Anser anser*).
Yellow-naped Amazon (*Amazona ochrocephala auropalliata*).
Births.—Goldie's Lorikeets, Spengel's Parrotlets, Queen Alexandra's Parakeets, Crimson-winged Parrakeets, Shell Parrakeets, Crested Pigeons.

SEPTEMBER

Female Cardinal (*Richmondena cardinalis*). Captured in the grounds.
Wood Ducks (*Aix sponsa*).
King Penguins (*Aptenodytes patagonicus*).
Hermit Thrush (*Hylocichla guttata faxoni*). Captured in the grounds.
Births.—Hybrid Northern × Pale-headed Rosellas.

October

Virginia Rail (*Rallus limicola.*)
Wood Duck (*Aix sponsa*).
Shell Parrakeet (*Melopsittacus undulatus*). This bird had escaped from someone and took refuge in one of our large outdoor parrot aviaries and lived peaceably with many of the larger species.
Albino Robin (*Turdus migratorius* variant). Snowy white all over.
*Meadow Lark (*Sturnella magna*).
Shell Parrakeets of various colours from Delacour's collection in Clères.
Reddish Egrets (*Dichromanassa rufescens*).
American Egret (*Casmerodius albus egretta*).
White Ibis (*Guara alba*).
*African Golden Orioles (*Oriolus oriolus*).
*Yellow Rail (*Coturnicops novæ boracensis*). A seldom seen species caught on the University campus near Baton Rouge, Louisiana, while the writer was on the A.O.U. Convention there.
Secretary Birds (*Sagittarius serpentarius*).
Births.—Nyasa Lovebirds (*Agapornis lilianæ*).

November

*Pair of Grand Eclectus (*Lorius roratus*).
*Pair of Alexandrine Parrakeets (*Psittacula eupatria magnirostris*).
*Pair of Plum-headed Parrakeets (*Psittacula cyanocephala*). An exchange with our Avicultural member F. H. Rudkin, Fillmore, California.
Orange-headed Ground Thrushes (*Geocichla citrina*).
Brown-backed Solitaires (*Myadestes obscurus*). A gift from our Avicultural member Ray Thomas, Beverly Hills, Calif.
Cockatiel.

December

*Lesser Hill Mynah.
*Greater Scaup Duck.
Births.—Goldie's Lorikeets, Zebra Finches.

* New to the collection.

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LONDON ZOO NOTES

By J. J. YEALLAND

The whole of one side of the Tropical House has been furnished with tropical plants, including orchids, and is now devoted to Hummingbirds of which twenty-two specimens of six forms arrived some five weeks ago.

The Golden-throated (*Polytmus guainumbi thaumantias*) and the Red-throated Sapphire (*Hylocharis sapphirina*) are new to the collection ; the remainder consist of Waterton's Wood Nymph (*Thalurania watertoni*) ; Pucheran's Emerald (*Chlorostilbon aureoventris pucherani*) ; Blue-breasted Sapphire (*Chlorestes notatus*), and another not yet identified which might be immature *Amazilia leucogaster*.

These birds are being fed on the liquid diet recommended by M. Cordier and plenty of fruit flies. The fateful forty days of which M. Cordier writes have almost passed and there have been no losses so far. This happy state could be attributed as much to the perfect condition of the birds on arrival—due to some excellent packing and to air travel—and to the amount of exercise they are able to take in this large flight as to the food they have received here.

Two Sunbirds new to the collection have been received from Messrs. Seago and Bloom ; they are the Nandi Double-collared (*Cinnyris reichenowi*) and the Uganda Olive-bellied (*C. chloropygius orphogaster*) ; also four of the Sudan Beautiful Sunbird (*Nectarinia pulchella lucidipectus*) and a single Uganda Green White-eye (*Zosterops virens stuhlmanni*).

An Active Parrot (*Amazona agilis*) and a Red-throated (*A. collaria*) were brought from Jamaica and presented by Lieut.-Col. Legard. It appears that these two Parrots are not uncommon in certain parts of the island.

Other presentations include an African Sea-Eagle (*Cuncuma vocifer*) ; three Silver Pheasants ; a Tropical Seed Finch ; a Guttural Finch ; a Nepal Hill Myna ; a Festive Parrot ; a Pennant's, a Black-tailed, and a Quaker Parrakeet.

A number of the Owls have laid, but unfortunately many of them are without mates and only the Great Eagle-Owls have young ones. The other Eagle-Owls that have laid are the Turkestan, the Fraser's, the Cape, and the Abyssinian Spotted. Both the Spectacled have eggs, and the Ceylon Fish Owls have laid a second clutch.

Greenland White-fronted, Upland Geese, Egyptian, Canada and Grey Lag have eggs ; also New Zealand (second clutch) and Common Sheld-Duck, as well as the usual Carolina and Red-crested Pochard. The Choughs are sitting on six eggs and Pheasants, including Temminck's and Swinhoe's, have laid, as have Magellan Penguins and a Gannet. A further three Black-footed Penguins have been bred.

The King Penguin hatched last August has almost completed its moult and a tuft of down on its head is all that remains of the baby plumage.

* * *

BRITISH AVICULTURISTS' CLUB

The thirty-eighth meeting of the Club was held at the Rembrandt Hotel, Thurloe Place, South Kensington, S.W. 7, on Wednesday, 13th May, 1953, following a dinner at 7 p.m.

Chairman : D. Seth-Smith.

Members of the Club : Mrs. J. R. Alderson, Miss K. Bonner, Mrs. V. M. Bourne, G. T. Clark, Mrs. G. T. Clark, T. Crewes, P. L. Dabner, A. H. D'Aeth, W. T. Dring, Mrs. W. T. Dring, B. H. Dulanty, O. E. Dunmore, J. F. M. Floyd, Miss S. A. Fothergill, J. C. Garratt, Miss D. Gask, H. J. Harman, Miss E. M. Knobel (Club Hostess), Miss M. H. Knobel-Harman, Dr. F. B. Lake, P. H. Maxwell, S. Murray, K. A. Norris, A. A. Prestwich, R. C. J. Sawyer, E. N. T. Vane, C. H. Wastell, H. Wilmot.

Guests : Dr. K. W. Aylwin-Gibson, J. Bailey, Miss D. Dabner, Mrs. J. C. Garratt, Miss H. Gentry, Mrs. F. B. Lake, Mrs. S. Murray, Miss C. D. Nunn, Mrs. D. Seth-Smith, Miss K. Tousey, Miss M. White, Mrs. C. H. Wastell, Mrs. H. Wilmot.

Members of the Club, 29 ; guests, 13 ; total, 42.

Miss Katharine Tousey, of the Massachusetts Audubon Society, showed the film *Audubon's America*. While, perhaps primarily intended for showing to ornithologists, it nevertheless contained much of very considerable interest to aviculturists generally. The film, the joint effort of a dozen or so photographers, gives a very good idea of the country through which Audubon made his journeys, pioneer from the ornithological point, and shows many of the birds he depicted in his monumental *The Birds of America*.

Miss Tousey not only gave a running commentary, but showed her versatility by imitating the call of many of the birds shown. Members are indebted to Miss Tousey for the opportunity of seeing a very informative film.

ARTHUR A. PRESTWICH,
Hon. Secretary.

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DIAMOND JUBILEE OF THE AVICULTURAL SOCIETY 1894–1954

The year 1954 marks the Diamond Jubilee of the Avicultural Society. The Society's Golden Jubilee in 1944 could not, unfortunately, be celebrated owing to the war ; the occasion was, however, marked by a special Jubilee Supplement of the AVICULTURAL MAGAZINE.

The President and Council feel that the forthcoming Jubilee should be commemorated in a manner worthy of the Society. It has, therefore, been decided to hold an Avicultural Congress in London, 16th–19th June, 1954.

Invitations to attend are being sent to prominent aviculturists throughout the world.

During the four days of the Congress there will be visits to the principal collections, papers will be read, and lunches and dinners arranged.

This preliminary notice is being given at such an early date in the hope that as many members as possible will arrange to be present and give their support to an event certain to add greatly to the Society's prestige.

ARTHUR A. PRESTWICH,
Hon. Secretary.

* * *

NEWS AND VIEWS

Preliminary reports indicate that this will prove to be a bad season for breeders, of parrakeets at least. The most interesting birth so far is of a young Moustache Parrakeet, now five weeks old, in the aviaries of E. N. T. Vane.

* * *

The American Pheasant Society has bestowed its greatest distinction, the title of Master Breeder, on John Willis Steinbeck, of Concord, California, " for outstanding accomplishment in the field of pheasant propagation."

Dr. D. S. Newill, Connellsville, Pennsylvania, whose work was also outstanding, received Honourable Mention.

* * *

The " Parrots and Miscellaneous Birds (Prohibition of Importation) (Amendment) Order, 1953 " authorizes the relaxation of the ban on the importation of birds of the Parrot family into Great Britain from Jersey, the Isle of Man, and Northern Ireland. The ban was

relaxed as from 8th May because the three authorities concerned have now imposed similar restrictions on the importation of Parrots from abroad to those at present in force in Great Britain.

* * *

C. af Enehjelm, Helsingfors, reports : " This year I have bred two Peach-faced Lovebirds, one in each of two nests, indoors. Cherry Finches have had two, four, and now three young. Two other pairs have not yet made any attempt. Cuban Finches, a nest of two, and another pair two young still in the nest. Golden Song Sparrows have two young. Two pairs of Bichenows and one pair of Red-headed Parrot Finches are sitting. One pair of *Forpus passerinus* has six young in the nest, and another pair has two. Black-crested Finches (*Lophospingus pusillus*) are sitting on two eggs. I bred this species in 1951 in an outdoor aviary, using the same hen, so I hope to be successful again."

* * *

The smuggling of birds into the United States appears to be greatly on the increase.

A U.S. attorney has expressed the belief that bird smugglers are now doing a larger business than narcotics smugglers. A member of the federal legal staff has said that virtually all the " quality " parrots and parrakeets are smuggled into the U.S. through Mexico.

The arrest has recently been announced of three persons said to be members of an international smuggling ring, " in a million dollar operation handling 70,000 birds annually." The three were released on $5,000 bail each at their appearance before the U.S. Commissioner on charges of conspiring to smuggle tropical birds.

The authorities are determined to prevent illegal importations. Considerable prominence is given in the Press to prosecutions and a few recent captions are : " Customs Agents seize 1,100 Birds " from two smugglers ; " Smuggler sentenced to 6 months for smuggling 304 birds from Mexico " ; " Parrot-smuggler draws $500.00 fine on charges of smuggling more than 600 parrots into the United States."

There is a total commercial ban on psittacines, and legally only not-for-sale pets are allowed to be imported. Persons who have been outside the U.S. for more than four months are allowed to take in two such birds each year, provided they have been in their possession the whole of that time.

* * *

WATERFOWL RINGING SCHEME—DETAILS OF RECOVERIES :—

Date ringed.	*Species.*	*Ringed by.*	*Date recovered.*	*Place where recovered.*
23.8.1951	Grey Lag Goose	Lt.-Col. H. C. Cator, Norwich.	3.3.1953	Wroxham, Norfolk. Killed by lorry.

An Amherst Pheasant cock, wrongly carrying one of the Society's waterfowl rings, escaped from near Preston at the end of October, 1952. Six months later the Wigan police reported its arrival at a local farm, from where it has now been recovered by its owner.

A. A. P.

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REVIEWS

OISEAUX DE CAGE. By M. LEGENDRE, with illustrations by L. DELAPCHIER. Éditions N. Boubée & Cie, Paris, 1952. Price 1,200 francs.

Since the second edition of *Les Oiseaux* by J. Delacour and M. Legendre, which was published in 1934 and quickly sold out, no book on aviculture has been published in France. The manual under review is therefore long overdue and will be greatly welcomed, particularly by French-speaking aviculturists. As the author states in his preface, in order that the book may be included in the special series published by Messrs. N. Boubée, and space is limited, only the Passeriformes and some families belonging to nearly related orders are dealt with. Parrots and Doves are not included and the author states that he hopes to deal with them in a later volume. The collection, which forms a very diverse group from the avicultural point of view, contains the species most popular as cage or aviary birds and those which are of particular interest to aviculturists rather than those which are rarely imported.

The book is divided into sections, the first containing general remarks on keeping birds in captivity, and this is followed by chapters on cages, food, rearing of young birds taken from the nest, mutations, and illnesses and diseases. After this various species are dealt with individually, a short description of plumage, etc., being given, with notes on the birds' adaptability to captivity. The book concludes with a summary of the most important points which must be regarded when keeping birds in captivity, a full bibliography and an index to all species under both the popular and scientific names.

The book is profusely illustrated with 12 colour plates, depicting 79 species, 53 black and white drawings, and 7 tail pieces by L. Delapchier. In addition there are 12 half-tone plates which include some very interesting photographs of cages varying from the " cages de luxe " of Japan to a cage for a blinded Chaffinch.

Monsieur Legendre has a vast and detailed experience in keeping birds and the book is full of most valuable information. A foreword is contributed by Professor J. Berlioz.

P. B-S.

FOREIGN BIRDS FOR BEGINNERS. By D. H. S. Risdon, F.Z.S. *Cage Birds.* London, 1953. Price 10*s.* 6*d.* net.

Whilst the title to this book is most apt it is inclined to give the impression that this is a re-hash of a very old work, which it most certainly is not. It may be fairly stated, without fear of contradiction, that no treatise on this subject has previously dealt with the matter so concisely, clearly, and in such an interesting manner.

Every reader should peruse the preface carefully, it contains some very useful axioms. Many experienced bird-keepers may well differ with some of Mr. Risdon's remarks, but if they apply common sense and allow for individuality in birds, as suggested in his preface, they will find no cause for real disagreement. It is a book for all bird-keepers and should be in every aviculturist's collection.

The coloured plates are most helpful to identification, if not of great artistic worth, but they fulfil their immediate purpose admirably. It is unfortunate that the wrapper portrays non-existent gems of aviculture, as this may well result in more knowledgeable bird-keepers jumping to the conclusion that it is written by someone not well acquainted with the subject. To those people therefore may I say : " Don't be put off."

E. N. T. V.

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NOTES

Parrots in Captivity

Listed in the Bibliography of *Records of Parrots Bred in Captivity* is the classic work, " Greene, Dr. W. T., *Parrots in Captivity*, 4 vols. (1884–88)."

A correspondent queries the correctness of the number of volumes. It may, therefore, be of interest to those in possession of this work if the position is clarified.

Parrots in Captivity appeared first in parts, of which parts 1 to 18 formed volumes i and ii. Volume iii consisted of parts 19 to 27, and half of part 28. The remainder of part 28, with parts 29 and 30 formed an unfinished volume iv, now extremely scarce. Messrs. Wheldon and Wesley, Ltd., recently had a set in parts pass through their hands, and I am indebted to them for this information. Volume iv consists of 36 pages with chapters and coloured plates of birds described as the Ceram or Chattering Lory, Red Lory, Reticulated or Blue-streaked Lory, Scaly-breasted Lorikeet, Malaccan or Long-tailed Parrakeet, and Malabar Parrakeet ; together with plates of Stanley's Parrakeet, African or Rose-ringed Parrakeet, and Horned Parrakeet.

There is a four volume set in the Library of the Zoological Society of London.

A. A. P.

Breeding of Rock Bunting (*Fringillaria tahapisi tahapisi*) in South Africa.

A querist correspondent of mine, Mr. R. G. Atkin, of Plumstead, Cape Province, South Africa, informs me that he has bred *Fringillaria tahapisi tahapisi* the Rock Bunting or Klip-mossie. They nested in a hanging basket containing hay, suspended about three feet from the ground. Three bluish eggs heavily marked with reddish-brown were deposited. Eggs were laid 22nd February, 1953, young hatched 7th and 8th March, 1953. Eyes were open 15th March, 1953, and the three young left the nest on 20th and 31st March. Although strong on the wing they kept much to the ground. Further young were hatched 8th April, 1953. In addition to their seed, bread and milk, mealworms, and termites available in quantity were supplied, and also seeding grasses. There seems to be no previous record of breeding of this particular species.

Allen Silver.

CORRESPONDENCE

BREEDING OF GREY PARROTS IN INDIA

It must be a great many years ago now that I was told about the Grey Parrots in India, and I am very interested to hear that it was Sir Godfrey Davis who told me.

All I remembered—and I must confess that as I get older my memory gets worse and worse !—was that a gentleman who had spent some years in India came to visit our farm, and said that he had *been told* of someone in India who had such a prolific pair of Greys that he, as it were, hardly knew what to do with the young ones.

As I knew from experience how difficult it is even to mate a pair of Greys successfully, let alone to breed from them, I was naturally sceptical—the more so because, in my experience, Greys go in for very small clutches of two or three eggs and the young spend a very long time indeed in the nest, so one would be most unlikely ever to have a glut of them.

I am not sure to which article of mine Sir Godfrey refers, but if, in it, I gave the impression that I thought the story was simply an invention on *his* part, I must have expressed myself very badly, and hasten to apologize for—as the newspapers say—any inconvenience it may have caused him !

Incidentally, I should not have said that being a bad judge of character was among my many failings, and if I have become a particularly " disbelieving fellow ", it may well be because my credulity has been sometimes strained to breaking point by—to give but one example—some visitor or other to our farm who solemnly assured me that they had heard of someone who had high hopes of breeding red Canaries, as they had recently bred a brood of Firefinch × Canary hybrids ! Naturally I assumed that I was intended to treat this as a great joke, until I realized that my informant took it quite seriously !

EDWARD BOOSEY.

BRAMBLETYE,
KESTON, KENT.

THE PROBLEM OF THIRD BROODS OF PARRAKEETS

My objection to the Duke of Bedford's two suggested methods of preventing a hen Turquoisine from having three nests is that both tend to risk the second brood, in order to make sure that there shall not be a third. There is, for instance, always the chance that a hen, suddenly left to finish off the rearing of her brood single-handed, may tire of her task and either give them insufficient food or stop feeding them altogether.

The Duke's second method entails doing the very thing I always avoid if I possibly can—namely taking away the young ones before they are fully independent of their parents. Occasionally, if the parents start moulting and neglect them, one is forced to do this, and the young have to learn to feed themselves as best they can, but I would never do it unless I was left with no alternative. Then, too, they have first to be caught up, and to do this the Duke recommends that one " should go in and net the whole brood as quickly as you can before they have time to do themselves serious damage " to which—knowing how wildly young Turquoisines batter about if one so much as approaches their aviary—I can only say, with the late Dr. Joad, it all depends what you mean by serious damage !

The Duke asks if I can say how many hens I have lost before they put up the old hen's satisfactory record, and if he means, as presumably he does, how many have I lost through letting them over-breed—the answer is quite definitely none ; if only because all the other hen Turqoisines I have kept were apparently staunch believers in a particularly rigid form of birth-control !

I cannot say how many of the young of the third broods have matured into good breeding stock, because those we kept for breeding purposes were among the first young ones the old pair ever reared here, but I can truthfully say that, not in one single instance was there any sign whatever of weakness or degeneracy among the third broods.

EDWARD BOOSEY.

BRAMBLETYE,
KESTON, KENT.

CANDIDATES FOR ELECTION

F. E. Badrick, 24 The Mall, Clifton, Bristol 8. Proposed by Miss K. Bonner.
H. Bard, 5 Alpha Road, Hutton, Brentwood, Essex. Proposed by Miss K. Bonner.
— Berraws, 49 Englestede Close, Birmingham 20. Proposed by Mrs. G. T. Clark.
M. Beulcke, 54 Jan Breijdellaan, Kortrijk, Belgium. Proposed by A. A. Prestwich.
The Viscountess Bury, Mount Stewart, Newtownards, Co. Down, N. Ireland. Proposed by Dr. E. Hindle.
D. F. Castle, "Clive Cottage," Stockens Green, Knebworth, Herts. Proposed by J. H. Reay.
J. Craig, 111 Glen Avenue, Larkhall, Lanarkshire. Proposed by Miss K. Bonner.
— Dolton, Sundown, Oakleigh Avenue, Hallow, Worcester. Proposed by Mrs. G. T. Clark.
G. Flaxman, 618 Layard Street, London, Ontario, Canada. Proposed by Miss K. Bonner.
R. S. Gilbert, 160 Heath Park Road, Gidea Park, Essex. Proposed by Miss K. Bonner.
G. A. Gjessing, "Woodberry Hill," Konnerud, Drammen, Norway. Proposed by Mrs. G. T. Clark.
E. H. Good, Buckland Fields, Lymington, Hants. Proposed by Mrs. E. H. Good.
J. Hayes, 113 Stuart Street, Boston, Mass., U.S.A. Proposed by A. A. Prestwich.
W. Kell, 1 Ash Terrace, Leasing Thorne, Bishop Auckland, Co. Durham. Proposed by Miss K. Bonner.
C. Kirby, 3 Hurst Grove, Lidlington, Beds. Proposed by Miss K. Bonner.
Brigadier Randall Pye, D.S.O., Avenings Farm, Danehill, Sussex. Proposed by E. J. Boosey.
C. T. Ridley, Birdwarren Farm, (Hulton P.O.), St. Vital, Manitoba, Canada. Proposed by Dr. E. Hurlburt.
A. Stevens, 56 Gwencole Crescent, Braunstone, Leicester. Proposed by A. A. Prestwich.
S. A. Tamblyn, "Penlaurel," South Petherwyn, Launceston, Cornwall. Proposed by H. E. Miller.
Dr. J. J. A. van der Merwe, P.O. Box 36, Bellville, C.P., South Africa. Proposed by W. R. Carthew.
A. Watson, 24 River Street, Brechin, Angus, Scotland. Proposed by Miss K. Bonner.
R. Younghusband, Ghyll Mount, Ellenborough, Maryport, Cumberland. Proposed by Miss K. Bonner.

NEW MEMBERS

The twenty-four Candidates for Election, proposed in the March-April, 1953, number of the Avicultural Magazine, were duly elected members of the Society.

READMITTED

P. H. Hastings, 182 Sultan Road, Landport, Portsmouth.
Dr. H. Wildeboer, "Burnbrae," Holderness Road, Hull, Yorks.

CHANGE OF STYLE

Lt.-Colonel C. C. Geertsema.

CHANGES OF ADDRESS

Mrs. M. Bennett, to 3 Adversane Road, Worthing, Sussex.
L. Dale Goetz, to 2537 N. Austin Blvd., Chicago 39, Ill., U.S.A.
Dr. J. R. Hodges, to 17 Bloomsbury Square, London, W.C. 1.
A. H. Isenberg, to 451 Portola Road, Woodside, Calif., U.S.A.
J. A. Loar, to 8 Coleridge Road, Wyken, Coventry.
I. B. Milligan, to 5 Silsey Avenue, Sale, Cheshire.
G. W. Noreen, to 10451 Rainier Avenue, Seattle 88, Washington, U.S.A.
J. Rodgers, to Balland House Cottage, Ashburton, Devon.
J. W. C. Sutton, to Salthouse, Holt, Norfolk.

DONATIONS

	£	s.	d.		£	s.	d.
W. L. Eaves . .	1	2	0	A. H. Isenberg .	15	0	
S. Porter . .	1	0	0	R. J. Hansen . .	10	0	
G. Banes	10	0					

MEMBERS' ADVERTISEMENTS

The charge for Members' advertisements is ONE PENNY PER WORD. *Payment must accompany the advertisement, which must be sent on or before the 15th of the month to* A. A. PRESTWICH, 61 CHASE ROAD, OAKWOOD, N. 14. *All members of the Society are entitled to use this column, but the Council reserves the right to refuse any advertisements they consider unsuitable.*

WANTED

First Annual Report (1947–1948) Severn Wildfowl Trust.—Lt.-Colonel C. C. GEERTSEMA, Boschwyk, Soestdyk, Holland.

Breeding pairs of Rosellas, Barrabands, and Red-rumps.—J. F. INGLIS, Montgarrie Road, Alford, Aberdeenshire.

AUSTRALIAN PARROTS IN CAPTIVITY

A series of articles by Alan Lendon published in the Avicultural Magazine. A full account of 60 species of Australian Parrots is included in the book which deals where possible with the author's personal experiences in keeping them in captivity in South Australia.

There are one coloured and seven photographic plates. Stiff paper cover. Price 7s. 10d., post free. Published by the Avicultural Society, and obtainable from the Hon. Secretary, 61 Chase Road, Oakwood, London, N. 14.

STEPHEN AUSTIN AND SONS, LTD., PRINTERS, HERTFORD.